

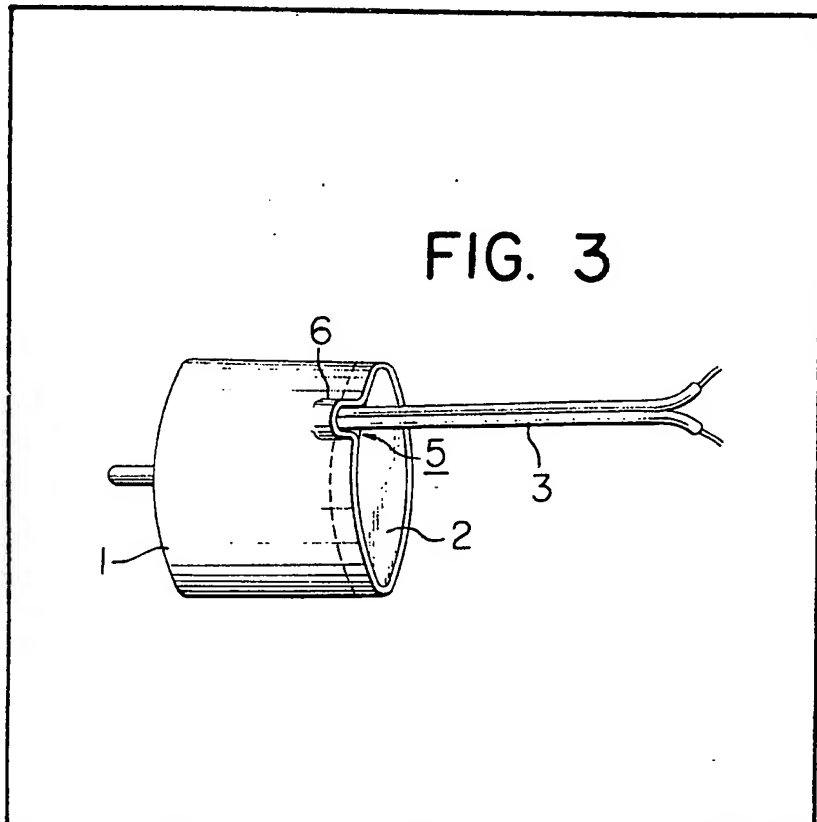
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(54) Electric Motor

(57) An electric motor shield casing of ferromagnetic material is closed at one axial end by an end cap 2, also of ferromagnetic material, and a part 6 of the periphery of the casing 1 is displaced radially outwardly to provide an outlet passage for lead wires 3 connected to terminal means of the

motor. This outlet passage extends at least in the axial direction of the shield casing. A tongue-shaped piece (8 Fig. 5 not shown) may alternatively be bent outwardly to provide the passage. In this way the lead wires may be firmly held between the displaced casing part and the end cap when the casing and end cap are press-fitted together.



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FIG. 2

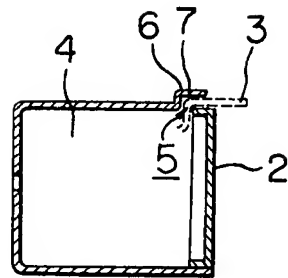


FIG. 1

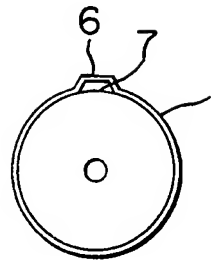


FIG. 3

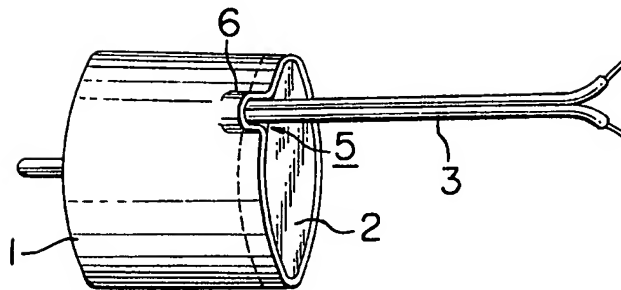


FIG. 4

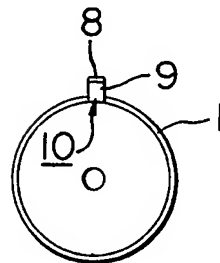
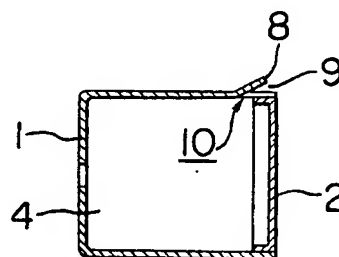


FIG. 5



SPECIFICATION

Electric Motor

This invention relates to electric motors and to shield casings therefor.

5 It has been proposed to mount an electric motor of the kind suitable for use in magnetic tape devices and provided with an electronic governor or motor speed control circuit in a shield casing made of ferromagnetic material to shield
10 noise generated during rotation of the motor. The control circuit board of the electronic governor may also be held in the shield casing. The shield casing may be formed from an elongate cylindrical body which is open at one axial end for
15 access to the motor proper and a cover or end cap for closing the open end.

With this construction we have found that there are problems in fixing terminal lead wires in position. Such lead wires are normally soldered to
20 the terminals of the motor. If they pass out through the casing by notched grooves or simple apertures, there is a possibility of abrasion at the edge of the notch or aperture. Repeated tension on the lead wires in various directions will
25 exacerbate the situation by causing friction which may result in rupture of the wire insulation or breakage of the wire altogether. Equally well, tension may result in the lead wires being pulled from the input terminal of the motor. One
30 suggested solution to this problem is the provision of a rubber bushing or metal sleeve. This clearly leads to additional expense both because of the additional component and the labour and
35 manufacturing costs.

The present invention has arisen out of our efforts to provide a better solution to this problem.

In accordance with the present invention there is provided an electric motor, provided with an
40 elongate cylindrical motor shield casing having a body made of ferromagnetic material and being open at one axial end for access to the motor proper within the casing body, and a cover or end cap for closing said open end which is also made
45 of ferromagnetic material; the casing body and cover together forming a substantially closed shield casing by press-fitting of one with the other; and part of the periphery of the body being displaced radially outwardly at the open end
50 thereof to provide an outlet passage for lead wires connected to terminal means of the motor, which outlet passage extends at least in part in the axial direction of the shield casing.

Suitably the outlet passage is defined between
55 the displaced body part and the adjacent portion of the outer periphery of the cover and the lead wires are firmly held between the displaced body part and the casing cover when the body and cover are press-fitted together.

60 The invention is hereinafter more particularly described by way of the example only with reference to the accompanying drawings, in which:—

Fig. 1 is an end elevation of a shield casing

65 body of an embodiment of electric motor constructed in accordance with the present invention;

Fig. 2 is a sectional side elevation through the shield casing, including the casing cover, for the
70 same embodiment of motor;

Fig. 3 shows an overall perspective view of the said embodiment of motor;

Fig. 4 is an elevational view similar to Fig. 1 but illustrating an alternative embodiment of shield
75 casing body; and

Fig. 5 is a sectional view generally similar to Fig. 2, for the embodiment of Fig. 4.

The motor shield casing of Fig. 1 to 3 is formed of ferromagnetic material and comprises a casing
80 body having an opening at one axial end and an end cap or cover 2 for closing said open end, the lead wires 3 (shown in dotted lines in Fig. 2) connected to the motor terminal portion are led out of the casing through an outlet passage 5
85 which includes space 7 defined by a bulged protrusion 6 provided at the periphery of body 1. The lead wires 3 are bent in an L-shape and firmly held in position by the shield casing cover 2, when this is press-fitted to the shield casing body
90 1. Consequently, an external tension applied to the lead wires 3 is almost completely absorbed by the casing in the region of passage 5. Thus, little external tension is transmitted to the motor
95 terminal portion inside the shield casing.

Furthermore, this construction avoids substantial leakage of noise through the outlet passage due to the overlap between casing body and cover.
In the embodiment of Figs. 4 and 5, a radially outwardly displaced part of the periphery of the
100 open end of the casing body is formed by outward bending of a tongue-shaped piece 8 defined by cuts at the periphery of the casing body to provide a lead wire passage 10 including space 9 defined by the tongue 8. In this embodiment, too, the lead
105 wires (not shown) are bent into an L-shape and firmly held in position between the shield casing cover 2 and the tongue. Consequently, an external tension applied to the lead wires will be absorbed at the point where the lead wires are firmly
110 pressed onto the shield casing cover 2 by the tongue and distributed to the casing as a whole. The tongue is of a simpler construction and easier to form than the bulged protrusion 6 of the
embodiment of Figs. 1 to 3.

Thus, it will be seen that in both our
115 abovedescribed embodiments it is possible largely to absorb an external tension applied to the lead wires, thereby preventing substantial tension from being applied directly to the input
120 terminal portion of the motor and consequent breakage or disconnection of the lead wires at the input terminal portion. In both embodiments the radially outwardly displaced portion may be formed by simple press work, so that positive
125 securement of the lead wires to the shield casing can be achieved without any significant addition to manufacturing costs.

Claims

1. An electric motor, provided with an elongate

- cylindrical motor shield casing having a body made of ferromagnetic material and being open at one axial end for access to the motor proper within the casing body, and a cover or end cap for closing said open end which is also made of ferromagnetic material; the casing body and cover together forming a substantially closed shield casing by press-fitting of one with the other; and part of the periphery of the body being displaced radially outwardly at the open end thereof to provide an outlet passage for lead wires connected to terminal means of the motor, which outlet passage extends at least in part in the axial direction of the shield casing.
- 15 2. An electric motor according to Claim 1, wherein the outlet passage is defined between the displaced body part and the adjacent portion of the outer periphery of the cover, whereby the
- 20 lead wires are firmly held between the displaced body part and the casing cover when the body and cover are press-fitted together.
- 25 3. An electric motor according to Claims 1 or 2, wherein the displaced body part is formed by a bulged protrusion provided at the periphery of the open end of the shield casing body.
- 30 4. An electric motor according to Claims 1 or 2, wherein the displaced body part is formed by outward bending of a tongue-shaped piece defined by cuts at the periphery of the open end of the shield casing body.
- 35 5. An electric motor substantially as hereinbefore described with reference to and as shown in Figs. 1 to 3 or 4 and 5 of the accompanying drawings.
6. The motor shield casing of an electric motor according to any preceding claim.

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